

that it is a barbarous custom unworthy of a civilised people. But Japanese tattooing is so superior to that of all other nations that European sailors are said to look forward to it as the principal advantage in a visit to the land of the Rising Sun.

This being the method in which the practice is carried out, Dr. Baelz comes to discuss its origin and meaning. The oldest reference we have to tattooing in Eastern Asia states that a Chinese prince, about three thousand years ago, who was nominated heir to the throne against his will, had himself tattooed in order to render his succession impossible. But at the present day the practice in China and Korea has fallen into desuetude, while in Burmah it still appears to be in vogue. In 1872, a man was exhibited in Europe who had been a prisoner amongst the Burmese, and who was tattooed from the crown of the head to the sole of the foot. The practice is still prevalent amongst the South Sea Islanders and the American Indians. In his work on the origin of writing, Wuttke seeks to show that tattooing is a kind of writing; but however correct this theory may be in the case of the tattooed peoples known to him, it certainly does not hold good in the case of the Japanese. The signification of the practice, says Dr. Baelz, amongst the latter is quite distinct from that which it has amongst other peoples. In the first place, amongst the South Sea Islanders and the Indians, tattooing has a religious, a symbolical meaning; it is a ceremonial, frequently a sacred process. There is nothing of this in Japan—neither ceremony, nor other peculiar meaning; it is done for cosmetic purposes and for no other. Again, amongst other peoples tattooing was a species of distinction; it marked the heroes, leaders, chiefs, of the tribe. In Japan it marks a man of the lower classes. Elsewhere, also, the uncovered parts of the body, such as the face, neck, hands, &c., are the favourite spots for tattooing; in Japan it is only the portions usually clothed which are tattooed. It is noticeable that amongst the Ainos the tattooing takes place on the exposed parts of the body, and that it is largely practised by women, two circumstances which distinguish it from the practice amongst the Japanese, and in which the Ainos resemble other northern peoples such as the Esquimaux, the Ostiaks, and others. In answer to the question, What meaning has the practice amongst the Japanese, as distinct from other races? the author replies that in Japan tattooing is a garment, a decoration. Various proofs of this statement are advanced, amongst them being the following: only those parts of the body are tattooed which are usually covered; all workmen do not tattoo themselves, but exclusively those whose work causes excessive perspiration, and who can, therefore, work best in a semi-nude state, such as runners, grooms, bearers, &c., and amongst these the practice prevails only with those who have connection with large towns, where nudity would be objectionable. Their garments are tattooed on their bodies, and they appear clothed without clothes before the public. The peasants are never tattooed. Again, the colours of the tattooing corresponds with that of the dress; it is the same dirty, dark blue. This theory never suggested itself to the Japanese: they thought that it must have come from China, and that it was a species of punishment. It was, it is true, at one time the custom to tattoo marks into criminals, but this was confined to a ring on the elbow. It would not explain the spread of the practice amongst certain classes in certain directions. Dr. Baelz's theory that it is merely a substitute for dress, and as the wearing of clothes is now compulsory, tattooing has lost its meaning. As for its origin, the peoples around the Japanese, the Ainos and the Loochooans, have practised it; and the Japanese navigators who travelled far and wide in the Eastern seas in the sixteenth century might well have seen it elsewhere. The Japanese discovered, says Dr. Baelz, that man can paint a figure on his skin which the rain cannot wash away, the sun wither, or even all-devouring Time destroy, and with their instinctive artistic skill they gradually developed and perfected the original rude figures in idea and execution. At first few only wore this blue skin-dress, but these few appeared to their companions decorated and clothed (a tattooed person does not appear actually naked), and as such a garment was cheap and lasting, and every man could have it according to his own fancy, tattooing became the fashion.

It may be added here that among the Igorrotos of the mountainous districts in the north of Luzon tattooing is also exceedingly elaborate, although it consists rather of a series of lines, curves, &c., than of one large, elaborate picture. Dr. Meier, in a paper read not long since before the Anthropological Society of Berlin, described the Igorrotos as tattooing the hands, arms, breast, and also part of the legs. The back is untouched

except by one tribe. A picture of the sun, as a number of concentric circles on the back of the hand, is the commonest object represented. The process takes place at puberty, and is a long one, as the punctures (which are made with a three-pointed instrument which is clumsy in comparison with the Japanese needles) become inflamed and take a long time to heal. The tattooing of the Buriks, a tribe of Igorrotos, takes three or four months to complete.

It may not be out of place here to refer to Dr. Baelz's account of the Japanese use of moxa, which, like tattooing, comes into his section dealing with the skin. On the bodies of almost every Japanese, and sometimes on every part of the body, one sees round white spots. These are the moxa spots, produced by burning the flesh with a species of plant, with the object of curing some affection. This is a universal popular specific in Japan, which is its home, although moxa is to be found used elsewhere. It was introduced from Japan to Europe by the Portuguese and Spaniards, and the name is Japanese. In May the leaves of the *Artemisia Chinensis* are powdered and dried, and the mass cut into small blocks or pieces. One of these is laid on the body and set on fire, burning slowly away. At first it naturally produces a sore, more or less deep, according to the intensity of the heat; soon this heals, leaving the scar for ever. The belief in the efficacy of this process is universal, and, Dr. Baelz thinks, not altogether misplaced, for the moxa acts much as our blisters do. Moreover, from the accounts of those who have gone through the cure, it is by no means so painful as one would anticipate from the heroic nature of the remedy.

SCIENTIFIC SERIALS

American Journal of Science, August.—Origin of coral reefs and islands, by James D. Dana. The arguments recently raised by Dr. A. Geikie against Darwin's theory of subsidence as an explanation of the formation of *atolls*, or barrier reefs inclosing a lagoon, are discussed and shown to be largely based on misunderstandings of the facts. It is pointed out that local elevations within the sinking area are not evidence against a general subsidence, such local disturbances and faults being almost necessary concomitants of subsidence. The conclusions as to changes of level in the large Pacific groups south of the equator agree mainly with Darwin's views, and the subsidence indicated, according to him, by *atolls*, is shown to be real, not an apparent sinking due to change of water-level.—On the meteorite of Tomatlán, Jalisco, Mexico, by Charles Upham Shepard. The striking peculiarity of this stone, which fell in August 1879, is the prevalence everywhere of octahedral crystals of nickeliferous iron. The specific gravity of the two fragments examined was 3.47–4.43.—On the widespread occurrence of allanite as an accessory constituent of many rocks, by Joseph P. Iddings and Whitman Cross. From its mode of occurrence and association the authors conclude that allanite must now be added to the group of primary, accessory rock constituents, similar to zircon, sphene, and apatite, though much rarer than any of these. In some regions it appears to be quite uniformly distributed through certain types of rock, such as the porphyrites and allied porphyries of the Ten Mile District, Colorado.—Crystals of analcite from the Phoenix Mine, Lake Superior Copper Region, by Samuel L. Penfield. These crystals, which occur thickly grouped together on calcite and native copper associated with tabular crystals of apophyllite, are of all sizes from minute particles up to one centimetre in diameter. The small ones are simply tetragonal trisoctahedrons of the form (211), $2 - 2$; the larger ones are of the same form, but with the planes differently arranged.—On a differential resistance-thermometer, by T. C. Mendenhall. This instrument has been devised and constructed for the study of certain problems connected with meteorology, especially the observation of soil and earth temperature, and the use of which would not demand greater skill than that of the ordinary meteorological observer. It consists essentially of a mercurial thermometer, not unlike ordinary forms, except that the bulb is greatly enlarged, so that the stem may have a diameter of about a millimetre, still leaving the scale tolerably open. By its means observations may be taken in less than a minute, no time being consumed in the preparation of liquids of known temperature at the observing station, as in the use of the thermo-junction on the resistance coil.—Impact friction and faulting, by George F. Becker. The author discusses the phenomenon of "step

faults," as described in Mr. Geikie's "Text-Book of Geology," p. 532, which he concludes to be not merely local, but of general occurrence.—A standard of light, by John Trowbridge. Objections are raised to the standard adopted at the Paris Conference of 1881-4—that is, the light emitted by a surface of platinum at the point of solidification. A more satisfactory standard might be an incandescent strip of platinum radiating a definite amount of energy, this energy being measured at a fixed distance, which will best agree numerically with the absolute system of measures now universally adopted in heat and electricity.—On hanksite, a new anhydrous sulphato-carbonate of sodium from San Bernardino county, California, by W. Earl Hidden. This new Californian mineral has a density of 2.562, hardness 3-3.5, and is readily soluble in water, yielding an abundant precipitate of barium sulphate when barium chloride is added to the solution. The author names it "hanksite," after Prof. Henry G. Hanks, whose name is so intimately associated with the mineralogy of the Pacific coast.—Mineralogical notes, by Edward S. Dana and Samuel L. Penfield. The chief subjects of this paper are the analysis of a large crystal of hanksite from California and an artificial crystallised lead silicate from the Desloge Lead Company, St. François County, Missouri.—On the amount of moisture which sulphuric acid leaves in a gas, by Edward W. Morley.—Local deflections of the Drift Scratches in Maine, by G. H. Stone. Traces of these indications of secondary glaciation have been observed, especially in the Seabasticook Valley, the Belfast and St. George River districts.—Successional relations of the species in the French Old Tertiary, by Otto Meyer. In these, as well as in the corresponding American formations, many animal and vegetable species can be traced along through the succeeding strata, the latter being apparently connected by descent with the earlier forms. The paper is accompanied by a comparative table of Lower, Middle, and Upper Eocene and Oligocene forms illustrating this principle.

The American Naturalist for August contains notices of some human remains found near the City of Mexico, by Mariano de la Barcena.—Evolution in the vegetable kingdom, by L. F. Ward.—The relations of mind and matter, by Charles Morris.—Affinities of Annelids to Vertebrates, by E. A. Andrews.—The use of copper by the Delaware Indians, by J. C. Abbott.—Notes of recent literature, &c.

Bulletin de l'Académie Royale de Belgique, June.—Note on some derivatives of tetrabromuretted hydrocamphene, by M. De la Royère.—On certain developments of algebraic series; the general formulas of these developments and their application to special cases, by M. J. Deruyts.—Researches on the action of a beam fixed at both ends and subjected to a movable overcharge, by M. G. Leman.—Questions of indeterminate analysis, by M. E. Catalan.—Note on the motions of the human brain, by M. Léon Frédéricq.—A new process of vivisection for the physiological study of the thoracic organs, by the same author.—On the optical properties of Ludwigite ($R_4FeB_3O_{10}$), by M. A. F. Renard.—Determination of the coefficient of compressibility for some fluids and of the variations of this quantity under different temperatures, by M. P. De Heen.

Rendiconti del Reale Istituto Lombardo, July 23.—On the causes and treatment of certain ophthalmic affections (preliminary note), by Dr. R. Rampoldi.—An exposition of the third paragraph of Riemann's memoir on the theory of the Abelian functions, by Prof. Giulio Ascoli.—Further researches on the neutralising agents of the tubercular virus, by Prof. G. Sormani and Dr. E. Brugnattelli.—Toxico-chemical affinities and differences of gelseminina and strychnine, by Dr. C. Raimondi.—On the phenomenon of etherification by double decomposition, by Prof. G. Bertoni.—The mental infirmities and last days of Torquato Tasso, by Prof. A. Corradi.—Note on an artistic palimpsest of the fourteenth century, by Prof. G. Mongeri.—Meteorological observations made in the Brera Observatory, Milan, for the month of July.

Rivista Scientifico-Industriale, July.—On the solar spots, their origin, nature, and harmless character, by Prof. Annibale Ricco.—Application of the telephone to the study of vibrating columns of gas, by Prof. Fossati.—A contribution to the study of etherification by double decomposition, by Prof. Giacomo Bertoni.—Geological constitution of Mount Vincigliata in the Fiesoli range, by C. del Lungo and R. Cocchi.

SOCIETIES AND ACADEMIES

PARIS

Academy of Sciences, September 28.—M. Bouley, President, in the chair.—Equilibrium of the moon, by M. F. Tisserand. In this paper calculations are submitted in support of M. Ch. Simon's theory, supplemented by M. Poisson, that, neglecting the eccentricity of the lunar orbit, the axis of rotation is displaced in the interior of the moon in such a way as constantly to oscillate in the plane perpendicular to the main axis directed towards the earth.—Note on earthquakes, by M. A. d'Abbadie. The author gives an account of the seismic movements observed by him last winter in Egypt, where the seismograph was exceptionally active. He urges a systematic study of these phenomena in France, such as has already been commenced by M. E. de Rossi in Italy, and by Mr. Milne in Japan.—Researches on the nitric cellulose substances (gun cotton, &c.), by M. Ch. Er. Guignot. The constituents and properties are described of the four distinct nitric cellulose bodies hitherto determined, all of which may be regarded as derivatives of the cellulose $C_{48}H_{40}O_{40}$, where 4eq., 6eq., 8eq., or 10eq. of water are replaced by the same number of equivalents of hydrated nitric acid.—Memoir on the treatment of phylloxera by means of the organic sulphurs and the polysulphides of ammonium obtained by dissolving powdered sulphur in the night-soil of cesspools, by M. J. Julien. This treatment is described as inexpensive, thoroughly efficient, and applicable to every description of soil.—Note on an unpublished document by Sergio Venturi, dated February 26, 1610, on the invention and the theory of the telescope, recently edited by M. G. Govi. This letter, addressed by the writer to the Marquis John Baptist Manso at Naples, is specially interesting as being anterior to the earliest publications of Galileo on the telescope which had just been invented by Lippersheim in Holland.—Note on the separation of liquefied atmospheric air into two distinct fluids, by M. S. Wroblewski.—Description of two new types of condensing hygrometers, by M. Georges Sire. The essential character of these hygrometers is that the moisture is precipitated on a bright metallic surface without solution of continuity. Perfect equality of temperature is secured in both instruments by the agitation of the volatile fluid and the thinness of the walls of the cylindric tube.—Genesis of the crystals of sulphur in square tables (five illustrations), by M. Ch. Brame. The author's experiments on the genesis of the square tables of sulphur show the direct passage from the curve to the straight line in the development of these crystals.—Morphology of the mandible of the hymenoptera, by M. Joannès Chatin. This organ of the hymenopteræ is shown to be perfectly analogous in all its parts to that of the grinding insects.—Note on the application of thermo-chemistry to the explanation of geological phenomena, continued; iron ores, by M. Dieulaufait.

CONTENTS

PAGE

Mr. Grieve on the Garefowl. By Prof. Alfred Newton, F.R.S.	545
"The Wave of Translation"	546
Our Book Shelf:—	
"Publication of the Norwegian Commission of the Measurement of Degrees in Europe"	547
Letters to the Editor:—	
On the Influence of Wave-Currents on the Fauna of Shallow Seas.—Arthur R. Hunt	547
Prehistoric Burial-Grounds.—T. A. Archer	548
Mars, Jupiter, and Saturn. By W. F. Denning	548
Radiant Light and Heat, III. (Continued) By Prof. Balfour Stewart, F.R.S. (Illustrated)	550
Notes	551
Our Astronomical Column:—	
The Satellites of Uranus and Neptune	553
Variable Stars	554
Astronomical Phenomena for the Week, 1885, October 11-17	554
Geographical Notes	554
The British Association:—	
Section C—Geology	555
Section D—Biology	560
Section E—Geography	564
Japanese Tattooing	566
Scientific Serials	567
Societies and Academies	568